

# **How Will Climate Change Impact Urban Quality of Life in California? An Economist's Perspective**

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# Introduction

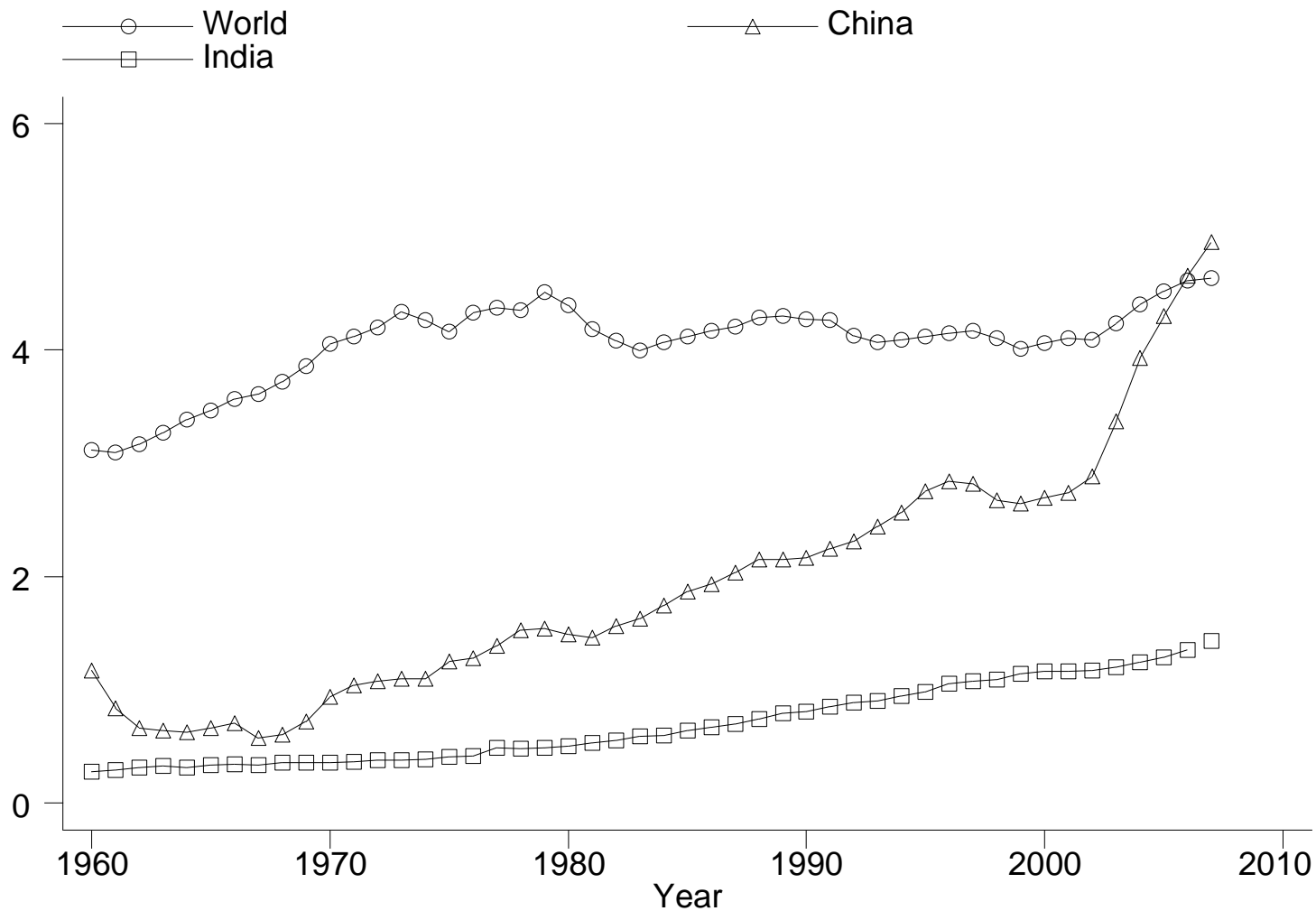
- California's unique urban quality of life entices millions of households to live and work here.
- Over the next decades climate change will pose a set of serious "known unknowns".
- How will our quality of life be affected?
- In the year 2060, will our kids want to live here?
- Should I sell my Westwood house?

# Challenges and Opportunities Created by Climate Change

- How does California's AB32 carbon mitigation legislation help the state (and the world) to adapt to changing conditions?
- Could capitalism help us to cope with many of the new problems we have unleashed?
- What new business opportunities do these anticipated challenges create?
- Anticipated crisis → opportunity → solutions → adaptation!

# Why We Need AB32

- The global greenhouse gas emissions (GHG) challenge
  - World population growth
  - World per-capita income growth
  - No global incentive to reduce GHG emissions



Time Trends in Per-Capita Carbon Dioxide Emissions

# Why I Support AB32

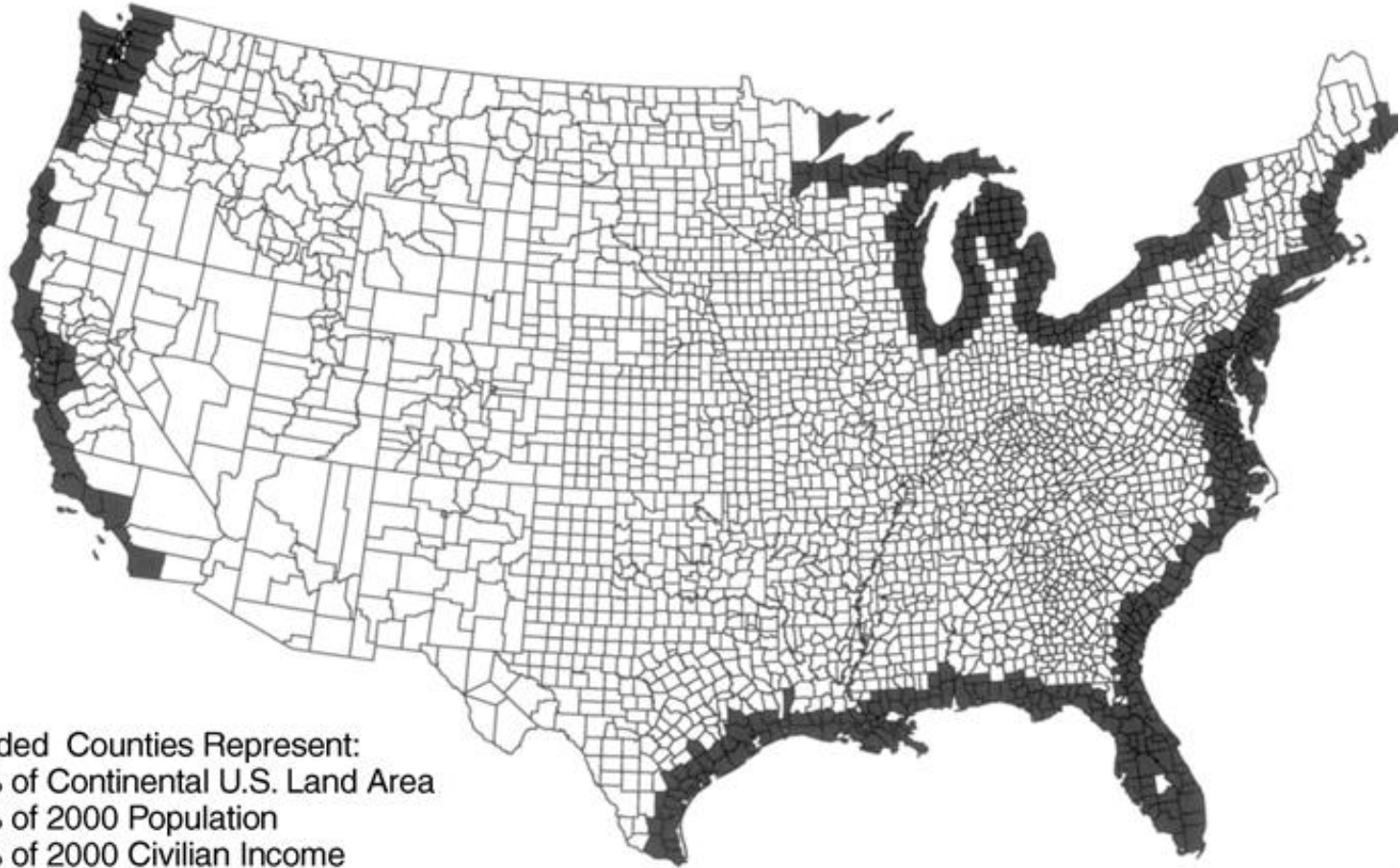
- We have unleashed climate change
- It represents a set of “known unknowns”
- The future challenges our children will face will be easier to cope with if we can achieve the “win-win” of achieving ongoing economic growth while sharply reducing our economy’s carbon intensity
- Ideas are public goods and the world needs “green” guinea pigs!

# Quality of Life is California's “Golden Goose”

- The total value of buildings in Los Angeles County is \$1.1 Trillion dollars!
- Millions of people are “voting with their pocket book” that California is great!
- Will home owners regret this bet?
- In this footloose age, those cities with great quality of life will attract and retain the skilled.
- Human capital as the engine of modern growth.

# The United States as a Coastal Nation

Counties with centers within 80 km of an ocean or Great Lakes coast



Shaded Counties Represent:  
13% of Continental U.S. Land Area  
51% of 2000 Population  
57% of 2000 Civilian Income



# The Economics of Climate Adaptation

- Around the world, we have chosen to place many of our cities in “harm’s way”
- Partially due to;
  - 1. productivity effects --- access to shipping routes
  - 2. historical factors
  - 3. amenities of water access and climate amenities

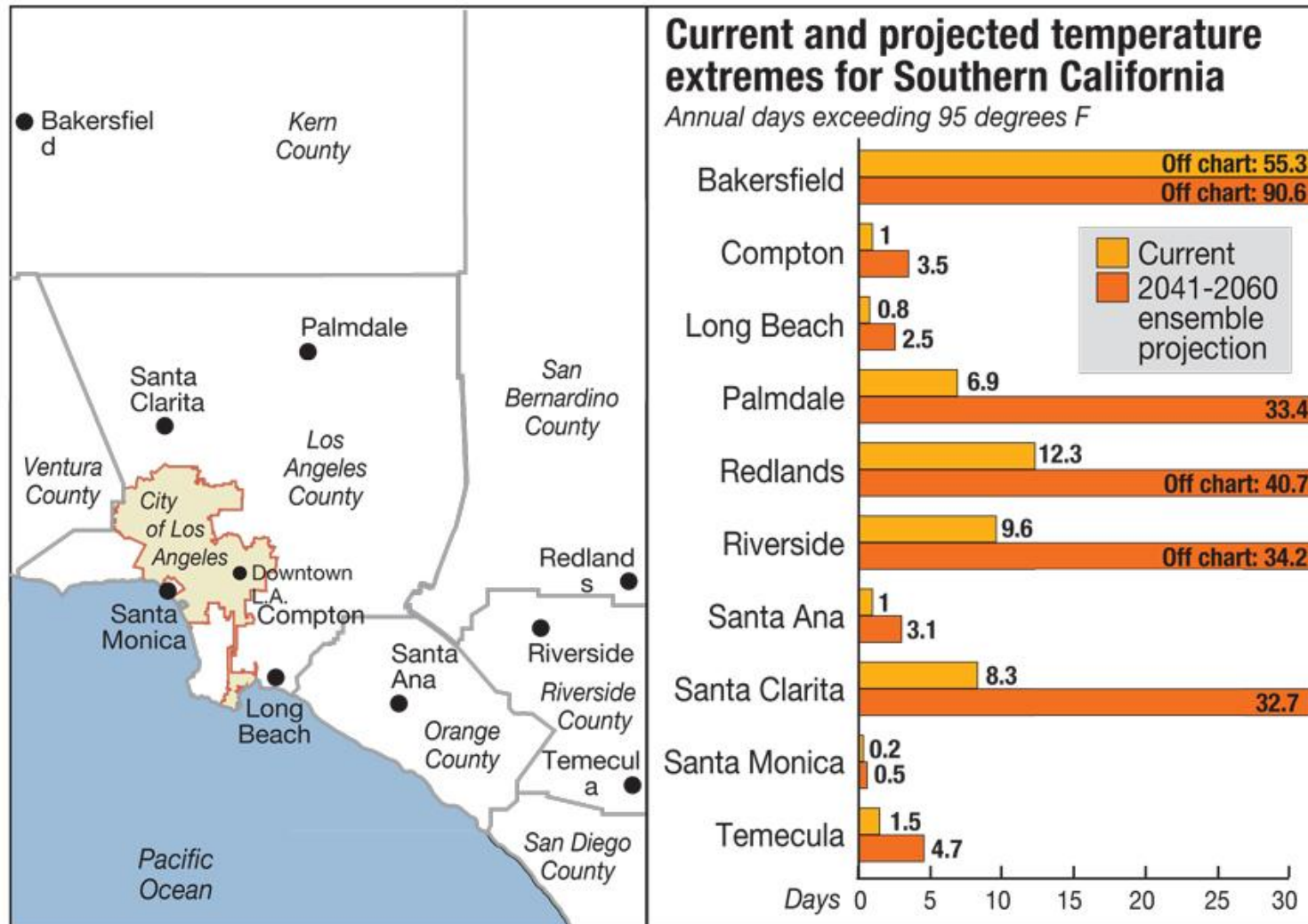
# Known Unknowns!

- We know that different geographic areas will face different threats including;
  - 1. temperature extremes
  - 2. rainfall extremes
  - 3. sea level rise
  - 4. natural disaster frequency and severity

# Climate Scientists as “Paul Revere”

- Our “nerds” step up and improve and refine their climate forecasts
- Climate science provides a refined “early warning” system pointing out new risks
- We trust the scientists objective science and update our risk assessments
- Will economic activity respond to the “new risk” maps?
- I say “yes!” many behavioral economists say “no!”

# Alex Hall's work at UCLA



Source: UCLA LARC study, 2012; chart based on the mean/average projected by the 19 climate models

# The San Diego Foundation's 2050 Study

## “A Regional Wake Up Call”

- 4 degrees (F) hotter on average
- Sea level will be 12-18 inches higher.
- water demand up 37% while supply will down 20%
- Wildfires will be more frequent and intense.
- Public health will be at risk from heat and air pollution
- Peak electricity consumption up 70%

# Microeconomics!

- For poor people, rich people, middle class people, For young people and for old people;
- How will their quality of life be impacted?
- No grand “macro” model of how the economy will be impacted!

# Three Adaptation Pathways Provided by Free Markets

- Competition
- Innovation and experimentation
- Migration

# How Will Households Respond to the “Wake Up Call”?

- Desire to live in the temperate coastal zone closer to the Ocean but not too close!
- Access to efficient air conditioning and other products that protect the public from climate risk
- Desire access to real time information about emerging risks --- heat waves, smog alerts (the Twitter Nation!)



# How Will Firms Respond to Anticipated Climate Change ?

- One person's misery is a firm's opportunity
- From supply and demand, likely to be higher water prices and electricity prices
- Such price increases will induce innovation
- Wildfire and other disaster risk → insurance contracts to encourage precautions

# Thom Mayne and Brad Pitt's Floatable Homes)



# The Competition to be the “Green Zuckerberg” and UCLA’s IOE Students



# Free Trade is a “Friend” of Climate Adaptation

- Ideas are public goods; the diffusion of new products such as air conditioning, electric vehicles, renewable power will help LDCs to adapt
- India and China as exporters of “green tech” lowers world price of quality adjusted wind turbines and solar panels

# Who Are We?

## Spock or Homer Simpson



# Three Cases

- Behavioral Economics (UC Berkeley) vs. neo-classical economics (University of Chicago)
- Spock: New News arrives → he reacts ⇒ exposure to new risks declines
- Homer Simpson: New News arrives → he ignores it and like the Titanic he hits the iceberg

# Winners and Losers

- This is the age of the 1%
- How do we protect the poor? (zoning, information, economic growth)
- Those who own land in geographic areas that suffer greatly will suffer an asset loss
- Can government play “too much defense”?
- The case of Hurricane Sandy and New York City and FEMA
- Moral Hazard and “tough love”

# Escape from San Diego?

- What if none of my predictions play out?
- If a city such as San Diego's quality of life suffers due to climate change, home owners there suffer an asset loss
- Households there can migrate to a Detroit or another city whose quality of life is relatively better
- Migration acts as an implicit insurance policy
- Internet and "twitter world" keeps us fully informed about evolving threats



# Moving to Higher Ground

- Both within and across cities
- Encouraging economic activity to move there

Las Vegas Metro Area	
Historical populations	
Census	Pop.
<a href="#"><u>1960</u></a>	127,016
<a href="#"><u>1970</u></a>	273,288
<a href="#"><u>1980</u></a>	528,000
<a href="#"><u>1990</u></a>	852,737
<a href="#"><u>2000</u></a>	1,375,765
<a href="#"><u>2010</u></a>	1,951,269

# Moscow in the Summer of 2010

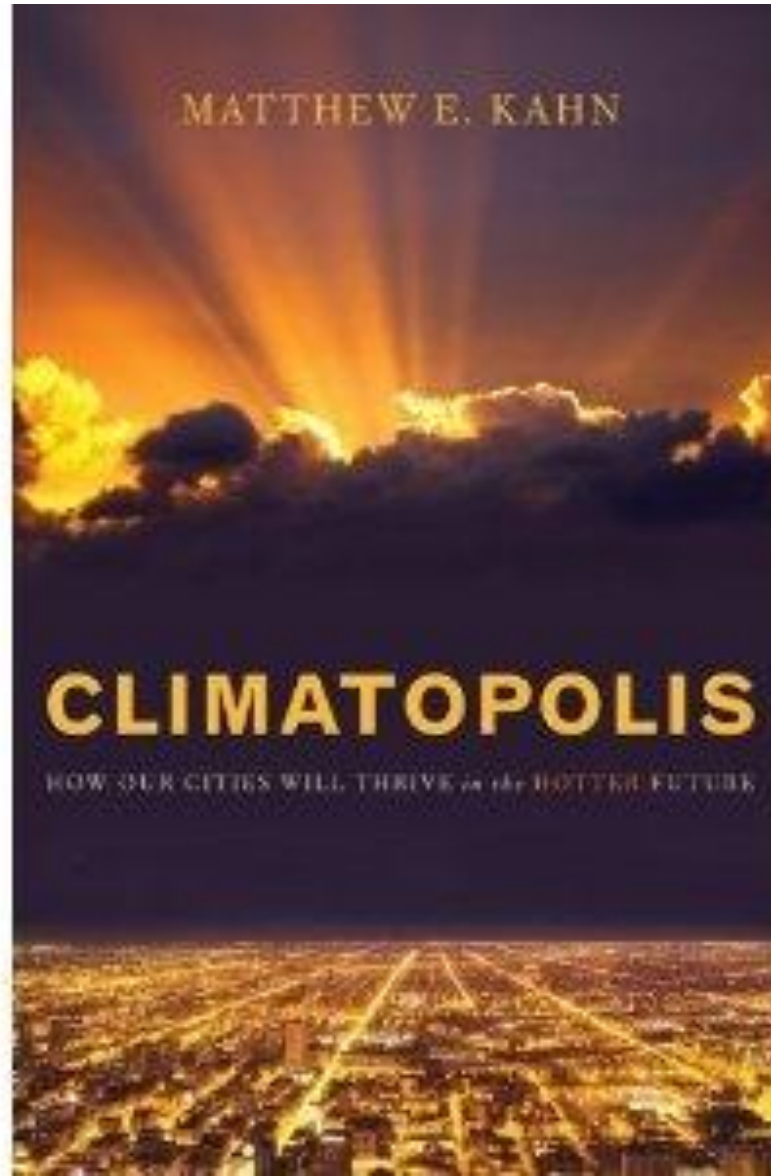
- The Economist's Review of my book
- **“Books about how people can and will adapt to climate change need not be Panglossian—as these two show”**



# The Moscow Time Line

- Matt finishes writing Climatopolis in April 2010
- Publisher asks him to “name names”
- Moscow Heat Wave of Summer 2010
- Climatopolis published in Fall 2010!
- Fool me once, shame on you
- Fool me twice, shame on me!
- What will happen to Moscow in the next heat wave?

# Basic Books September 2010



# My Vision of Los Angeles in 2050

- Density near the cool coast
- Smart phones providing real time information
- Resources to protect the poor
- Choice and menu and diversity
- An infrastructure that can “take a punch”
- We know that we don’t know what climate change will pose
- AB32 reduces the climate risk and thus ensures that our state will continue to thrive

# My New Work on Quality of Life in China

- Blue Skies in China? To be published in 2014 by the University of Chicago Press
- As China urbanizes, and grows more educated – a desire to be more like California!
- Demand for quality of life nudges the Central Government to deliver!
- The legitimacy hypothesis